WHAT IS CLAIMED IS:

1.   A packet router that supports multi-time scale resource management, comprising:

a management agent ("MA") that manages a differentiated services policy information database operable to store policies on forwarding packets in the packet router;

a resource server system ("RSS") that controls forwarding of packets in the packet router based on adaptive selections of policies from the policy information database;

a flow measurement system ("FMS") that monitors packet flows through the packet router and generates statistic reports which affect the RSS selection of control; and

a hardware forwarding engine ("HFE") that receives and forwards packets in response to the RSS controls.

2. The packet router of claim 1 wherein the MA resides in a management plane of an communications network.

3. The packet router of claim 1 wherein the RSS resides in a control plane of a communications network.

4. The packet router of claim 1 wherein the HFE resides in a data plane of a communications network.

5. The packet router of claim 4 wherein the communications network comprises an internet protocol ("IP") network.

6. The packet router of claim 1 wherein the FMS includes a monitor resource controller ("MRC") for receiving adaptive selections of policies from the policy information database and for distributing the statistics reports generated by the FMS.

7. The packet router of claim 1 wherein the FMS includes a monitor resource abstraction library ("MRAL") that functions as a real-time monitor executive and generates the statistics reports.

8. The packet router of claim 1 wherein the FMS includes a monitor data collector/data source controller ("MDC") for receiving data collected at observation points of the HFE.

9. A system for supporting multi-time scale resource management in a packet router, the system comprising:

means for managing a differentiated services policy information database that stores policies on forwarding packets in the packet router;

means for controlling forwarding of packets in the packet router based on adaptive selections of policies from the policy information database;

means for monitoring packet flows through the packet router;

means for generating statistic reports that affect the resource server systems selection of control; and

means for receiving and forwarding packets in response to the resource server system controls.

10. The system of claim 9 wherein the means for managing is a management agent ("MA").

11. The system of claim 9 wherein the means for controlling forwarding of packets in the packet router is a resource server system ("RSS").

12. The system of claim 9 wherein the means for receiving and forwarding is a hardware forwarding engine ("HFE").

13. The system of claim 9 wherein the means for monitoring is a flow measurement system ("FMS").

14. The system of claim 13 wherein the means for generating statistic reports is a flow measurement system ("FMS").

15. The system of claim 14 wherein the FMS further comprises:

an FMS reports buffer for buffering statistics reports generated by the FMS;

a policy information buffer; and

a dynamic component for controlling adaptation of the packet router to dynamic service requirements and resource conditions.

16. The system of claim 15 wherein the DC further comprises:

a monitor resource controller ("MRC") for receiving adaptive selections of policies from the policy information database and for distributing the statistics reports generated by the FMS;

a monitor resource abstraction library ("MRAL") that functions as a real-time monitor executive and generates the statistics reports; and

a monitor data collector/data source controller ("MDC") for receiving data collected at observation points of the HFE.

17. A method of providing multi-time scale resource management in a packet router, the method comprising:

managing a differentiated services policy information database that stores policies on forwarding packets in the packet router;

controlling forwarding of packets in the packet router based on adaptive selections of policies from the policy information database;

monitoring packet flows through the packet router;

generating statistic reports that affect the forwarding of packets in the packet router; and

receiving and forwarding packets in response to the forwarding of packets in the packet router.

18. The method of claim 17 wherein the managing is performed by a management agent.

19. The method of claim 17 wherein the controlling forwarding of packets in the packet router is performed by a resource server system.

20. The method of claim 17 wherein the monitoring is performed by a flow measurement system.

21. The method of claim 17 wherein the generating statistic reports is performed by a flow measurement system.

22. The method of claim 17 wherein the receiving and forwarding is performed by a hardware forwarding engine.